ARCTIC OIL AND ENVIRONMENTAL DEGRADATION

by

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To agree to talk on this subject was, I knew, to accept the role of devil's advocate. I began to collect tangible evidence of ecologically wasteful and abusive practices in the Arctic to bolster my confidence. Frank memoranda between members of resource agencies; reports from pilots and renegade oilfield workers; pictures of garbage behind the mess halls, barrels drifting on lakes, eroding cat trails, and the classic blunder of a Geophysical Services, Inc. 'dozer operator who carved the initials of his outfit onto the tundra in letters 200 feet high - all these went into my file.

Then I changed my mind. For one thing, it was clear that arctic science lived in a glass house as far as vehicle tracks and debris were concerned. Mainly, however, I saw that no purpose would be served by presenting a diatribe against the petroleum industry at this Science Conference. The oil men know what has been done to the tundra, and now they know I know. If an emotional uproar ever seems useful I could always send a few photos to a national magazine. But at this time it will be much more profitable to describe the context in which I view the mélange of changes, blatant and subtle, that comprise the phenomenon called "environmental degradation." This perspective is mostly in the form of questions but I will also make a suggestion or two that may help protect the public interest in our fabulous arctic resources.

Degradation is the process of being lowered in value. Environmental degradation, therefore, encompasses all things that lessen the value of air, water, soil, the biosphere, or human opportunity. There are several characteristics

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of environmental degradation that will trip us up if we do not recognize them. First, the term can be defined only subjectively in relation to value systems of a person, company, or agency. There is no single scale of measurement such as economists use to measure Gross National Product or as Richter uses on his earthquakes. Second, environmental degradation is a process - an ongoing, often cumulative thing that can, nevertheless, occasionally be reversed (as when eroding trails are covered again by pioneering vegetation). Third, environmental degradation as an entity is very hard to wrestle with because it is the sum of an almost infinite list of changes, plus and minus, of varying strengths. The individual changes are much easier to quantify.

In the Arctic one can sense the gathering momentum of two kinds of environmental devaluation: the diminution of biotic productivity and the attendant but distinguishable loss of opportunity.

Tundra covered by roads, camps, airstrips, drilling pads, and debris is just so much biological productivity eliminated. Areas bared by tracked vehicles operated on soft ground erode; the scars, and in some cases the gravelly bottoms of streams into which the silt flows, are likewise less productive. Soil and water onto which oily wastes have been spilled are less able to convert solar energy/nutrients into plants and animals. Even the simple fact of many men and countless noisy pieces of machinery being in an area will cause some animals like swans and wolves to desert the tundra.

Oilfield development in the central Alaskan Arctic will doubtlessly increase opportunities for some ventures such as metallic mineral exploration and the guiding of hunters and fishermen. We should recognize that the same development eliminates other opportunities. I think especially of the impossibility of establishing an arctic wilderness area in a place where oil has been extracted.

I think, too, of the diminishing degrees of freedom for natural sciences in the Arctic; as just one example, can you imagine the life of "permanent" vegetation sample units set out by a range ecologist or phytosociologist anywhere between the Canning and lower Colville Rivers?

Recognizing the reduced production and foregone opportunities accompanying industrialization of the North, we must examine our attitudes toward the new developments to make sure that regional land planning reflects national goals.

Three basic questions face arctic land managers. First, should any oil development at all be allowed on a particular planning unit? Second, what rates of petroleum development are best? And finally, what techniques of exploration, extraction, and transportation should be used? My position is that because arctic oil is a public resource under public domain, the public itself, through government, has the right to answer these questions.

Those of you in field level positions in Alaskan resource administration must have winced when I posed the first question. I am sure you prayed for the truth of David and Goliath, and mentally searched for a slingshot. I have no illusions about how often we will bar the gates to oil development. Despite Prudhoe, however, where government didn't even build a gate, let alone decide whether to open or close it, I think the question has relevance for the future. According to the petroleum industry, all of Alaska's North Slope, most of arctic Canada, and large parts of the Arctic Ocean may be underlain by gas and oil. Surely it is feasible in that huge expanse to post some areas "off limits" to oil exploration and development when this is justified by high-value wildlife, scientific, scenic, or recreational resouces. These reserves might serve for 10, 20, or 50 years while oil development proceeds elsewhere. Periodic appraisals of the industry and the reservations would show whether changes in land use allocation are necessary.

There are a number of advantages to this strategy. One is flexibility - e retention of freedom of choice, a prime element in modern land planning. If decide to forego oil production in favor of letting a piece of tundra continue s modest yearly production of caribou, peregrines, flowers, recreation, and ience, we can always change our minds. On the other hand, when an area is ened to oil development the biological and physical changes to the landscape d the inertia of massive capital investments result in a fixation of land use. get locked into a pattern that defies change even in the face of totally fferent economics of the energy industries or attractive alternatives of land se.

Another advantage is that we may never need the oil under the reserved must nds, and thus could save them from any industry-caused degradation. Oil may ecome as obsolete for energy in the near future as hayfields and woodlots are now. he economic life of arctic oilfields may be only 20 to 30 years, and if we forfeit ilderness for 100 years to pump oil for 20, we should know it before leasing round to the drillers.

The rate of petroleum development that is best for our nation is also key question. Since the apparently huge oil reserves of the Arctic will ignificantly affect the flow of world trade, geopolitical factors are involved hat are beyond my ken. Nevertheless our recent experience on the North Slope hows that the speed at which exploration and development occur has tremendous nvironmental implications. Much of the abuse of the landscape at Prudhoe Bay an be traced directly to the competition among companies to find and lease the best ground in the shortest possible time. The State of Alaska's haste to get in on the bonanza - as evidenced by the eleventh-hour selection of nearly 3 million acres south of the discovery area just before the Federal land freeze went into effect and by the lease sale to be held in a few days - has contributed to the problem.

The implication is that there has to be adequate control of the pace f development, and that this control evidently has to come from government. When ock strata under public lands are favorable for oil accumulation, and after overnment determines that new fields should be developed, shares should be dvertized in a government-controlled exploration venture. Shares would be nlimited, and companies would bid what they think can be invested into that articular venture. Then exploration would proceed in an orderly way, with omplete sharing of geophysical and test-well data. When exploration is completed, he companies would operate under a unit plan to develop the field, with shares n proportion to the original exploration bids. This process (and I admit that will have to leave details for others to work out) would reduce competition from he exploration and drilling phases of petroleum development; those who dislike his un-American idea can take comfort from the fact that manufacture and market rocesses could be just as competitive as now. (And for a vivid description of hat, I refer you to Garnsey's article on "Protecting the Public Interest in Oil hale Development," in the Natural Resources Journal for October 1968.)

A rather important by-product of orderly, area-by-area exploration and evelopment is that the pieces of ground held for later exploration will benefit rom improved oilfield technology. If all of arctic Alaska had been thoroughly plored between 1930 and 1960, the area would be a disgraceful mess. Seismic erations in those decades were routinely done with cats run with blades down. proved technology and more governmental attention over the past year or two ve already lessened the degradation of environment during exploration work. e development of hovercraft may lead to further improvements. Some day, in e near future, it may be possible for petroleum exploration to come and go aving the land undamaged.

This leads logically to my third point, the question of operational echniques. An oilfield can be a reasonably nice place to hunt moose or go anoeing - witness the intensively-industrialized half of the Kenai National Moose ange. An oilfield can be a comfortable, convenient place to do a bit of natural cience. Whether it is or not depends largely on how much thought goes into oil ield development. I will not go into detail about the sources of the problems r what can be done to solve them. I do wish to point out that everything done o protect the environment during oilfield development costs money. Some of he costs are borne by government (research, administration, enforcement of egulations) and some are absorbed by the petroleum companies. If the money is ot spent to take care of the soil, water, vegetation, wildlife, and general ppearance of the land, the costs of this environmental degradation are taken ventually out of the pockets of taxpayers as a whole. With Garrett Hardin see "Finding Lemonade in Santa Barbara's Oil," Saturday Review, May 10, 1969), urge that as many of the costs of environmental protection and repair as possible e internalized within the industry.

The best summary of my position on the relation between oil and other and uses in the Arctic is in the closing statements by John Krutilla in his resentation to the Thirty-Third North American Wildlife and Natural Resources onference on March 12, 1968. Speaking especially of water resources in a paper ntitled "Balancing Extractive Industries with Wildlife Habitat," he said:

"... We have learned that technological progress has carried us to the point where we no longer need to destroy natural environments which have either scientific research value or special characteristics required for specialized recreation activities, in order to increase the output of tangible goods and services... While we can rely on technology to compensate for depletion of certain kinds of natural resources, we

cannot rely on technological progress to increase the supply of natural environments which yield utility through direct personal contact... Accordingly, if we wish to leave our heirs the most valuable legacy, we ought to make provision for those assets which appreciate with the passage of time. This we can do with an active policy of intelligent and discriminating preservation of existing natural environments which have characteristics required to serve scientific research objectives and the entire gamut of outdoor recreation wants."

In the next few years let's try to devise and practice a policy of developing the North with an eye to all of the riches of this fascinating area. Man's last chance to prove his civility in a pristine environment has begun.

There is only one Arctic.